

BiSlide® Positioning System

Durable, simple to configure, modular design, low cost

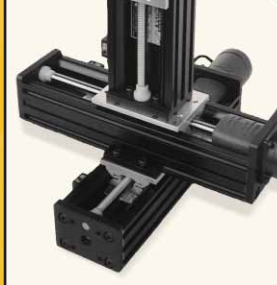
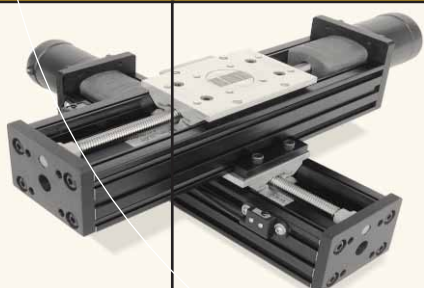
NEW PRODUCT

Manual and Motorized

BiSLIDE®

High Precision Linear Motion Components

C A T A L O G B - 0 1



The most versatile system available



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There's a BiSlide to Fit Your Application

Standard BiSlide Models

Maximum travel (inches): 5, 10, 15, 20, 30, 40, 50, 60, 80
Custom lengths are available

Advance per turn: 2.00 mm; 0.100"; 0.400"

BiSlides Have Thousands of Different Uses. Check Out these Typical Applications:

For Manual BiSlides:

- Positioning
- Aligning
- Measuring
- Testing
- Fixturing
- Clamping
- Machining soft materials
- Linear guides for other actuators

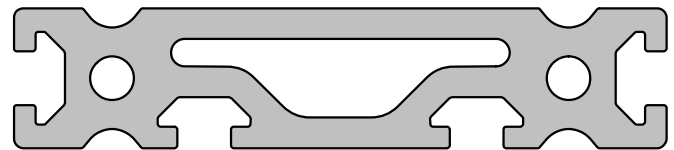
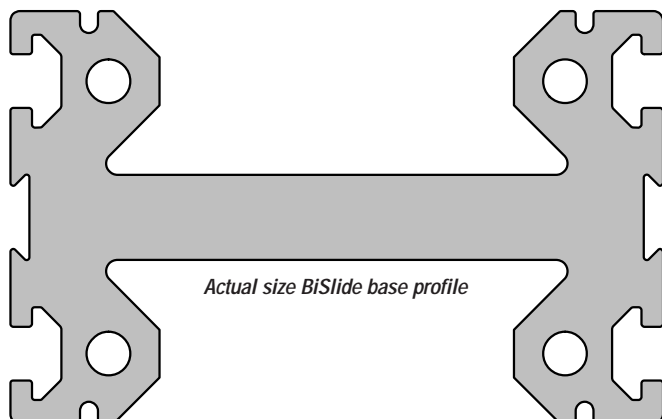
For Motorized BiSlides:

- Automation
- Positioning
- Aligning
- Measuring
- Testing
- Scanning
- Cartesian robots
- Engraving
- Routing
- Pick & Place
- Machining soft materials

BiSlide Advantages

A Cut Above Iron and Steel Slides. Here's Why:

- Lighter weight
- Less wear
- Fewer parts
- Lower cost
- Higher strength to weight ratio – uses hard aluminum alloys and a strong I-beam cross section
- PTFE bearings deliver much lower friction than metal sliding on metal
- Corrosion resistant anodized finish
- Operate without lubricants
- Spare set of guide-ways built-in on the flip side just in case the primary ones get damaged

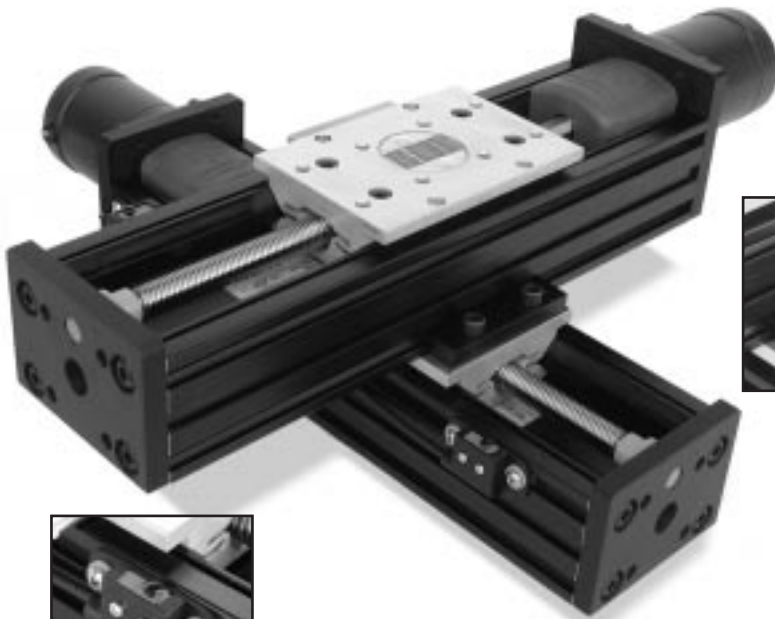


Actual size BiSlide T-slot plate profile

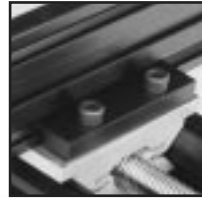
Superior to Ball Slide Positioners. Here's Why:

- Lighter weight
- Fewer parts
- Lower cost
- Higher strength to weight ratio – uses hard aluminum alloys and a rigid I-beam cross section
- More compact than most ball screw driven stages
- Self-holding – unlike ball screws, the 10 pitch or 2 mm lead screw will not creep or backdrive
- Resistant to impact loads
- Natural wiping action expels debris
- Gradual wear not sudden failure of rolling element type screws and guide-ways
- Corrosion resistant anodized finish
- Operate without lubrication
- Spare set of guide-ways built-in on the flip side just in case the primary ones get damaged

A Modular Design For Any Application



Easy XY configuration, Y axis can be positioned anywhere on X



Simple XY configuration using cleats



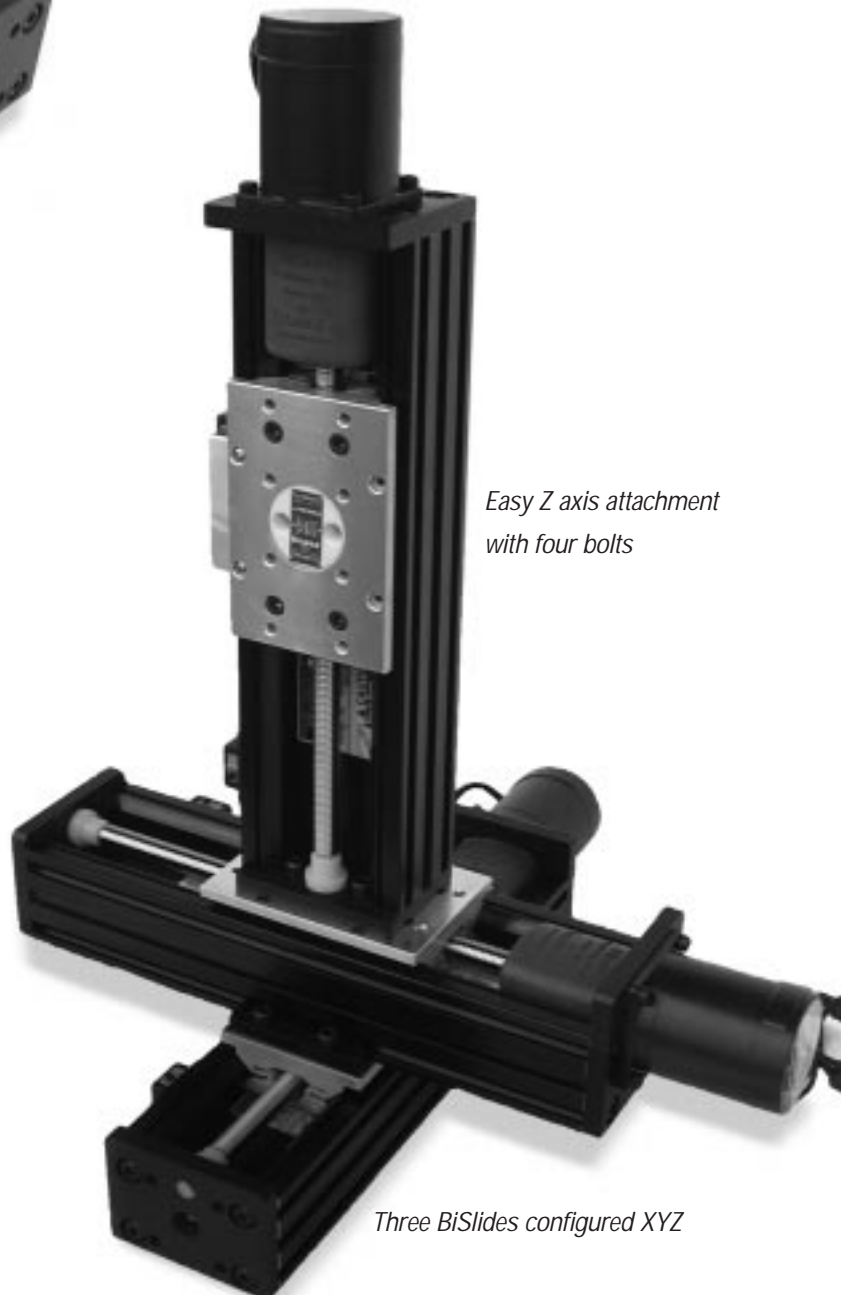
Full-travel adjustable limit switches mount directly to any BiSlide assembly

The Velmex BiSlide is a modular system of positioning stages and hardware that allows you to quickly and easily create a complete multi-axis, high accuracy positioning system.

One, two and three axis systems are created by simply bolting together standard components. These components can be configured and assembled to form a work cell dedicated to a specific task. Because BiSlide components are all standard and interchangeable, if this task changes or disappears, you can readily disassemble the components and put them to work elsewhere.

Initial system cost can be minimized by using hand-operated BiSlides. When it's time to upgrade to a motor driven system, simply replace the hand wheel with a motor. It's fast, simple, inexpensive, and requires no machining or other modifications.

If you're a manufacturer, you'll find the BiSlide system delivers ease of service and upgradeability to keep up with your rapidly changing marketplace. If you're a researcher, you'll like BiSlide's easy reconfigurability and expandability for different projects. If you're an educator, you'll appreciate BiSlide's durable construction, low cost, and easily understood design concepts for demonstrating linear motion principles.



Easy Z axis attachment with four bolts

Three BiSlides configured XYZ

BiSlide Construction Delivers High Precision and Long Life

Large, Versatile Carriage – provides a 4.6" x 3.1" mounting surface suitable for carrying anything from assembly fixture to a measuring probe – eight threaded attachment holes let you securely fasten any kind of payload. Also, there's four accessory holes for limit switch cam or other sensors. Carriage has fit and wear compensation adjustments

Precision Lead Screw – we make our own lead screws to make sure they're the best quality. Precision rolled acme thread, hard nickel plated for smooth, trouble-free operation and long life

Motor Plate – the four bolt design securely attaches the motor

Coupling – precision-honed to provide a rigid motor to lead screw mating

Base – made from hard alloy aluminum I-beam that's hard anodized for good looks and long life. *BiSlide* is the strongest, lightest, and most durable slide actuator available

Roller Bearings – preloaded to provide axial constraint for the lead screw. Designed for high capacity, for impact resistance and long life

Support Bearing – delivers just the right combination of constraint and anti-vibration qualities for the lead screw

StabilNut™ – a Velmex exclusive, is the "solid", low friction connection between the lead screw and carriage. It has an antibacklash design with fine mesh adjustment for responsive rotary to linear translation

End Plate – provides a convenient way to directly mount a *BiSlide* assembly on end. Four hole pattern mates with other *BiSlide* carriages and T-slots

T-Slots – the universal connections to the base for cleat or side mounting, limit switches, framing and tandeming. Accommodate T-nuts, bolts and cleats for maximum flexibility

Bearing Pads – super slick PTFE compound for lowest friction, smooth linear motion, and long life

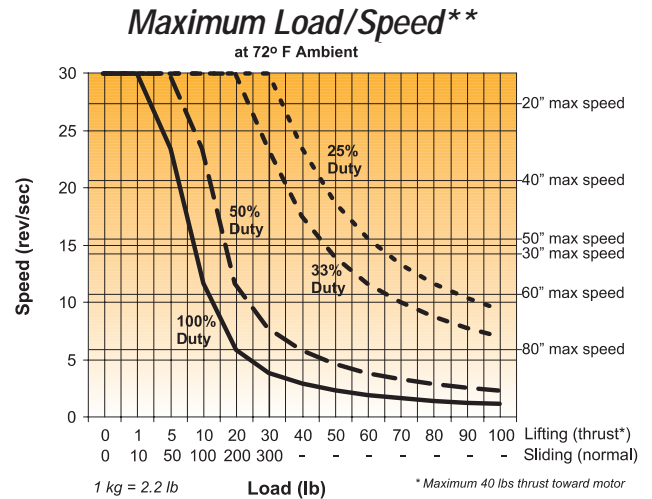
A Versatile, Durable Design

BiSlide Delivers the Accuracy and Load-Carrying Capacity You Need

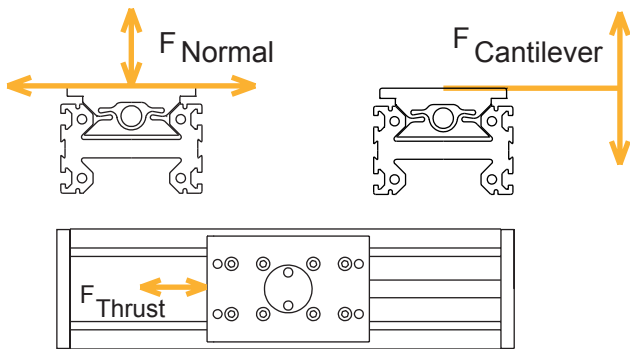
- Coefficient of friction:** 0.09 typical
- Coefficient range:** 0.04 (Heavy Load Dynamic) to 0.15-0.3 (Lubricated Heavy Load Static>1 hour)
- Minimum motor torque required:** 55 oz-in
- Repeatability:** 0.0002" over short term, long term dependant on wear
- Straight line accuracy:** 0.003" over entire travel distance
- Screw lead accuracy:** 0.003"/10" (0.076 mm/25 cm)
- Operating temperature:** 0 to 180° F (-18 to 82° C)

Finish

- Lead screw:** hard nickel plated
- Carriage:** machined aluminum
- Other surfaces:** black anodized aluminum



**In other environments contact our technical sales department for recommendations



Maximum Load Carrying Capacity

Load	Dynamic	Static	Momentary
Normal Centered	300 lb.	300 lb.	1000 lb.
Thrust	100 lb*	200 lb.	300 lb.
Cantilevered	500 inch-lb. (See formula below)		

For cantilevered loads: equivalent center load = $(d \times L/2) + L$
 where d= distance load is from center in inches, L= Load (lbs.)

How to Specify Your BiSlide Model

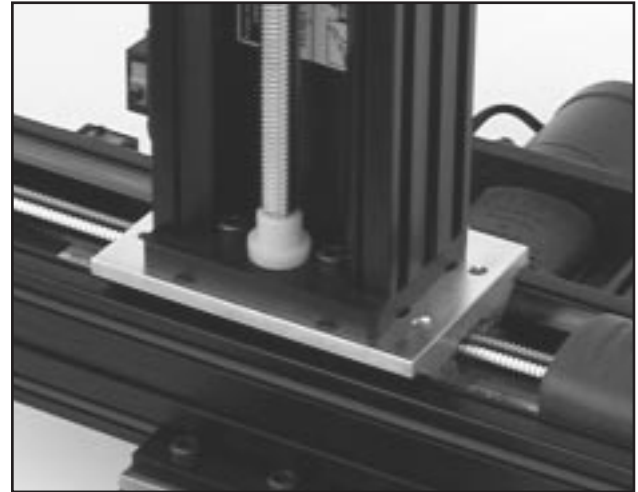
M N 1 0 - 0 2 0 0 - E 0 1 - 2 1

Cross Section M	Design	Lead Screw	Advance/Turn	Mounting
	10=Inch	Blank	None	Blank=None
	11=Inch & Way Cover	M02	2.00 mm	11=Basic Knob
Drive Scheme		E01	0.10 inches	12=Knob/Counter, Horizontal, Increment + from Knob
N=Nut/Screw Drive		E04	0.40 inches	13=Knob/Counter, Vertical, Increment + from Knob**
F=Free Sliding				14=Knob/Counter, Horizontal, Increment - from Knob
				15=Knob/Counter, Vertical, Increment - from Knob**
				20=NEMA 23 Motor Mount
				21=NEMA 23 Mount & Limit Switch
				30=NEMA 34 Motor Mount
				31=NEMA 34 Mount & Limit Switch
				**For BiSlides oriented vertically with the knob up.
				Use the horizontal reading (-12 or -14) for applications with knob down.
	Design Travel* (Tenth of Inch)			
	Standard Travel Lengths (Inches):			
	5, 10, 15, 20, 30, 40, 50, 60, 80			
	*Free sliding models have 2.4" longer travel, way cover models under 40" travel have 1.0" less			

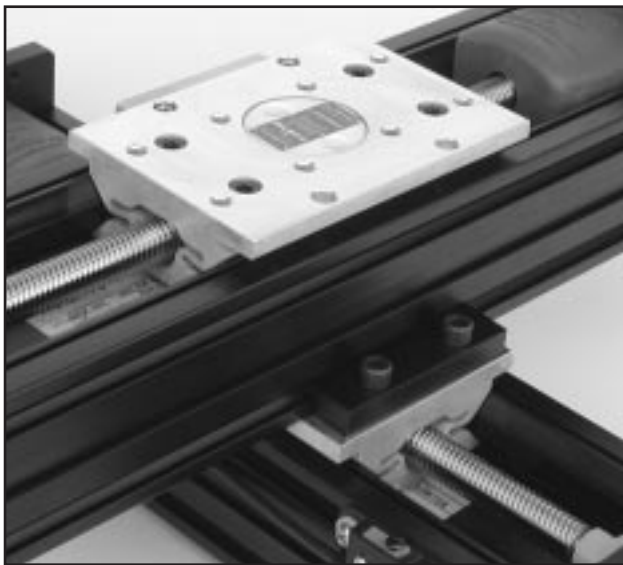
Simple, Versatile Mounting Makes Multi-Axis Systems Easy

The BiSlide system is designed around a hard alloy aluminum I-beam base. Mounting features include a pair of T-slots on each side, drilled end plates and a series of threaded holes on the carriage. Using standard Velmex cleats, T-nuts, bolts and T-Slot plate (see page 11,) you can quickly and easily configure a BiSlide system for multiple coordinates. Combine that attachment flexibility with the availability of BiSlides up to 80" and choice of manual or motor-driven models, and you have a positioning system that will do precisely what you want, at low cost.

Here are two mounting examples. *There are more on our web site at www.bislides.com.*



Above: Easy XZ Configuration. Just use the four predrilled holes in end plate. Any 90 degree orientation is possible. *Items Needed:* four MB-1 bolts.

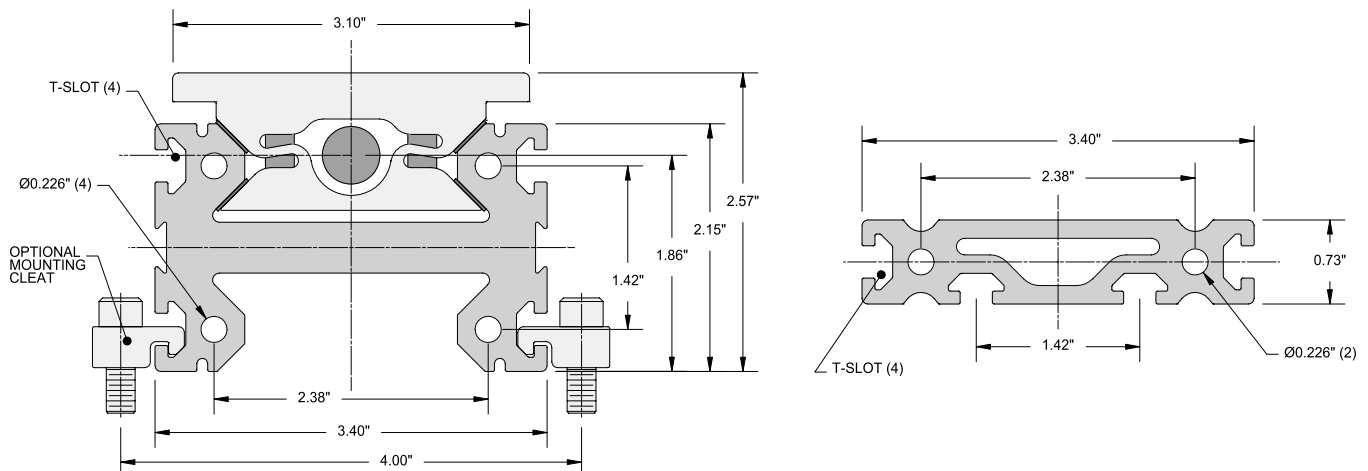


Left: Rigid XY attachment using BiSlide cleat. The Y axis can be positioned anywhere on X axis without an adapter plate or special holes. *Items needed:* Two MC-2 cleats and four MB-1 bolts.



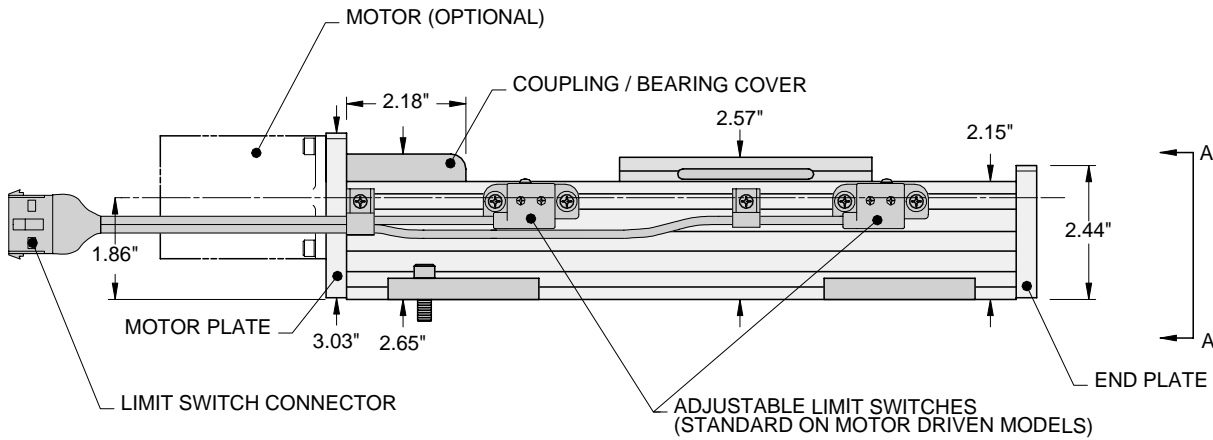
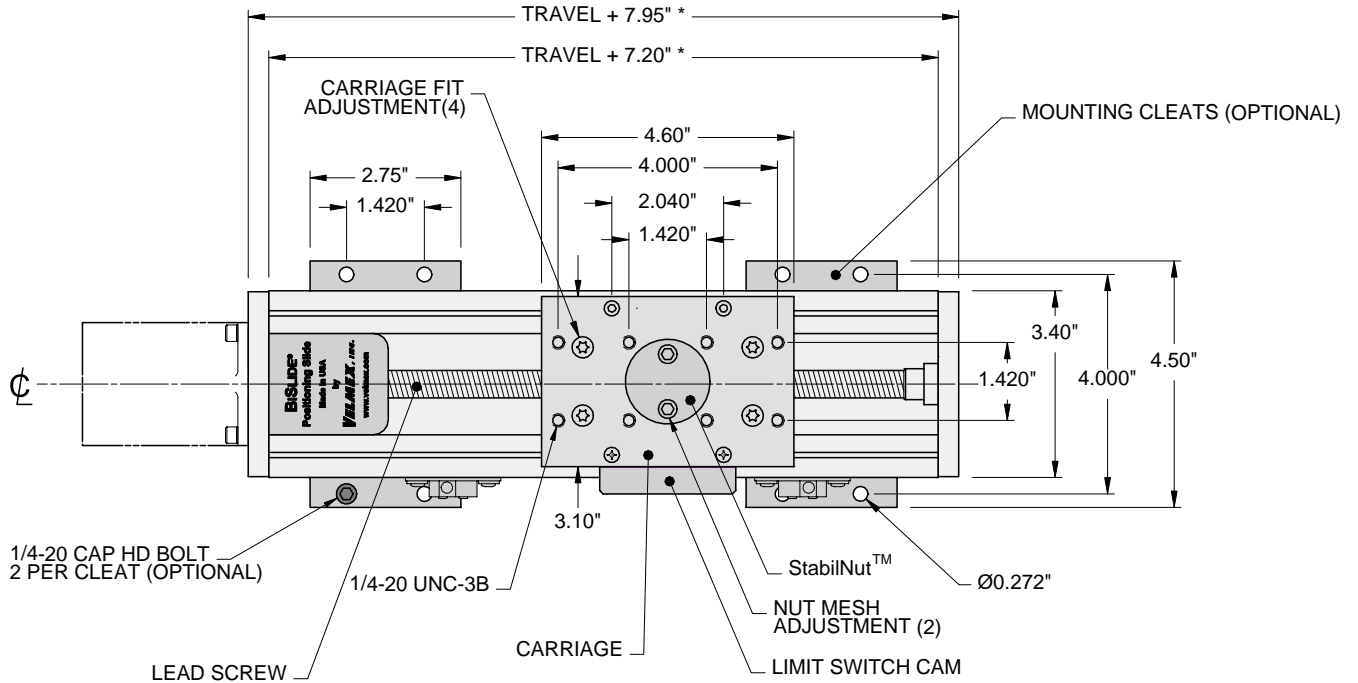
Right: Velmex BiSlide Cleat. Cleats are available in standard two-hole versions (shown), a two-hole design with 2 inch spacing for optical table mounting, and single hole cleats for attachment to other T-slot framing systems.

Series M BiSlide Assembly and T-Slot Profile Cross Section



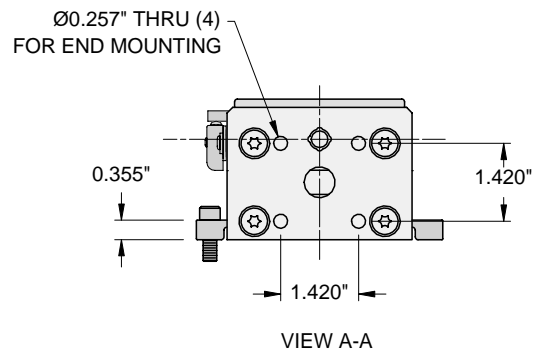
BiSlide Assembly Series M Dimensions

* ADD 2.40" FOR UNITS WITH 40" TRAVEL AND LONGER



Travel Length (Inches)	Cleats Recommended**
5	4
10	4-6
15	4-8
20	6-10
30	8-12
40	10-14
50	12-16
60	14-18
80	16-20

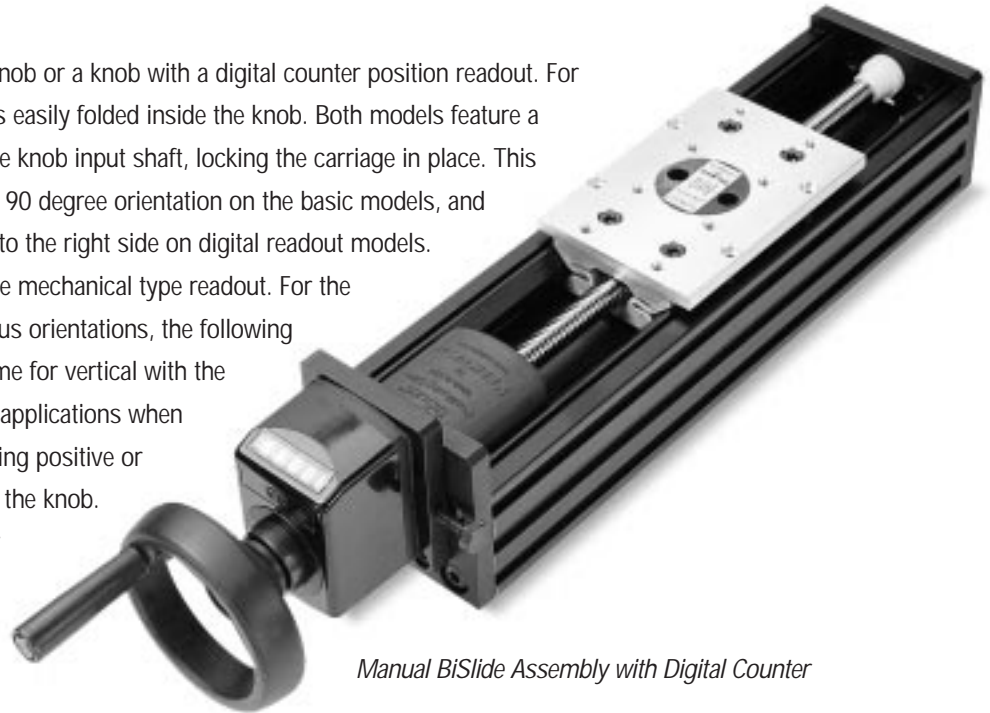
**Use higher number for heavy loads



Manual BiSlide Available With or Without Position Readout

Manual BiSlide models have a knob or a knob with a digital counter position readout. For added convenience the knob crank is easily folded inside the knob. Both models feature a thumb lock that applies friction to the knob input shaft, locking the carriage in place. This thumb lock can be positioned at any 90 degree orientation on the basic models, and can be relocated either to the left or to the right side on digital readout models.

The digital counter is an absolute mechanical type readout. For the digits to be viewed correctly in various orientations, the following styles are offered: for horizontal (same for vertical with the knob down) applications, or vertical applications when the knob is up, and either incrementing positive or negative when traversing away from the knob. Manual BiSlide models can be easily retrofitted with a motor and limit switches in the field without special parts or machining.



Manual BiSlide Assembly with Digital Counter

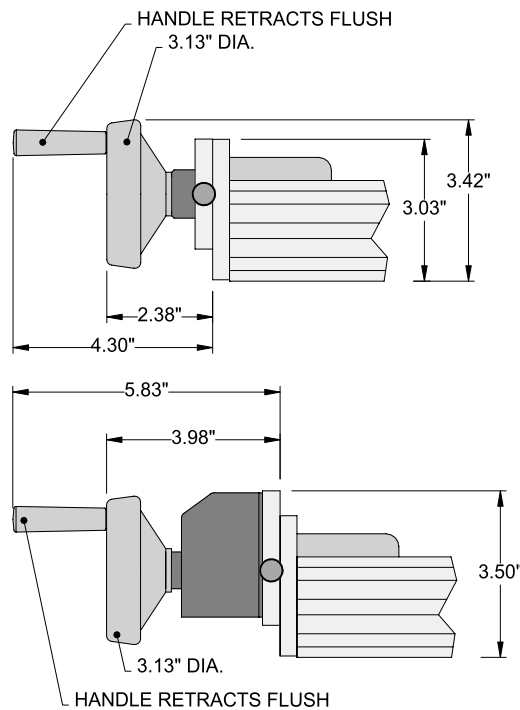
Knob/Crank and Digital Counter Dimensions



Manual BiSlide Assembly



Manual BiSlide Assembly with Digital Counter



Also available is the Free Sliding Model (BiSlide without lead screw drive) for direct push/pull, air cylinder, and for guiding other types of actuators.

Different lead screw characteristics provide application versatility.

Lead Screw	Advance/Turn	Resolution with Readout*
E01	0.100"	0.001"
E04	0.400"	0.001"
M02	2.00 mm	0.01 mm

An Important Note About Lead Screws:

The E01 and M01 are self-locking designs that under normal conditions will not creep or backdrive (external forces on carriage do not cause lead screw to rotate). However, with the thumb lock off, the E04 can backdrive when used vertically or when the thrust load exceeds 2 lbs.

* Resolution is vernier lines on the least significant digit.

Motor-Driven BiSlides For Faster, More Accurate Positioning

All BiSlides are designed to accommodate NEMA size 23 and size 34 motors without modifications. Many other types of motors can also be used, most of them requiring no modifications to the BiSlide.

All BiSlides can be purchased with, or without motors. Related motor drives, controls, and software are also available.

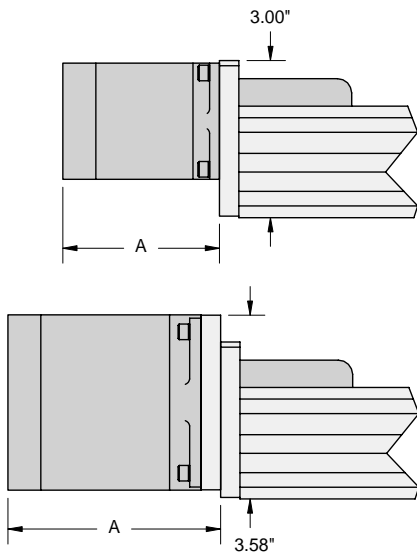
The motor to lead screw connection is a precision honed steel coupling that rigidly clamps to the motor shaft without the need for key ways or set screw flats. Size 23 motors use a 0.375" to 0.250" coupling bushing; size 34 motors use an additional plate.

Motor-Driven BiSlides are available in standard lengths to 80"/203.2 cm. Please refer to the chart on page 2.



Motor-Driven BiSlide Assembly
with NEMA 23 Motor

Motor Mounting



Motor Size	A
Nema 23 Two Stack (M062-LS)	2.93"
Nema 23 Three Stack (M063-LS)	3.93"

Motor Size	A
Nema 34 One Stack (M091-LS)	2.90"
Nema 34 Two Stack (M092-LS)	4.15"

Choose the lead screw that fits your application.

Lead Screw	Advance/Turn	Resolution with Step Motor (400 steps/rev.)
E01	0.100"	0.00025"
E04	0.400"	0.001"
M02	2.00 mm	0.005 mm

An Important Note About Lead Screws:

The E01 and M01 are self-locking designs that under normal conditions will not creep or backdrive (external forces on carriage do not cause lead screw to rotate). However, with the motor power off, the E04 can backdrive when used vertically or when the thrust load exceeds 2 lbs.

Frames and Bases Provide a Solid Foundation For Your Equipment

The Velmex T-Slot and Base (page 11) structural profiles are the raw material you need to create strong, durable base and framing structures to support your BiSlide assemblies.

Two standard designs (below) are available. F4-Style bases provide top rail support along the full perimeter, and

are well suited to supporting heavy loads. The F2-Style bases have top rails on two sides, ideal for supporting BiSlide parallel coupled assemblies.

To keep cost low, these bases are usually shipped as an unassembled kit. Fasteners, plates, leveling feet and I-beam rails are included, and all necessary holes have been drilled and tapped. Detailed, easy to follow assembly instructions are included with each kit. These products are also available fully assembled.

Our web-site at www.bislides.com shows many more examples of frames and bases.



F4 style bases provide maximum support for heavy loads. F4 bases have I-beam top rails on all four sides



Loads bearing on the top rails are supported directly on the legs, unlike other systems that rely on fastener friction in T-slots for support



T-nut for strong attachment to T-slots with 1/4-20 threaded bolts



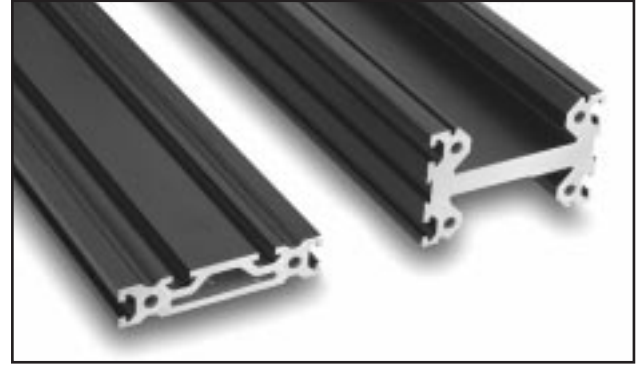
F2 style base with a three axis BiSlide system. F2 Bases have I-beam top rails on two sides

Build Complex Configurations With the Versatile T-Slot Plate and Base Profile

The T-Slot Plate and Base profiles are the universal solutions for building supporting structures. These heavy duty, hard anodized aluminum extrusions have abundant T-slots for multiple attachment possibilities. Using the BiSlide cleat and T-nut system, you can easily attach structural profiles to themselves and to the BiSlide.

The photo below to the right shows a complete base made from T-Slot Plate.

See the full size cross section of the T-Slot and Base profiles on page 2, and the dimensional drawings on page 6.



T-Slot Plate and Base Extrusion Profiles

It's Easy to Position Your BiSlide Vertically

Vertical application versatility is built-in to every BiSlide. The end plate includes four mounting holes for attaching directly to the carriage of a horizontal assembly, or any other suitable mounting surface. For even more mounting flexibility, the standard BiSlide assembly can be end mounted, or "sandwich" cleated to the T-Slot plate and I-beam Base profiles.



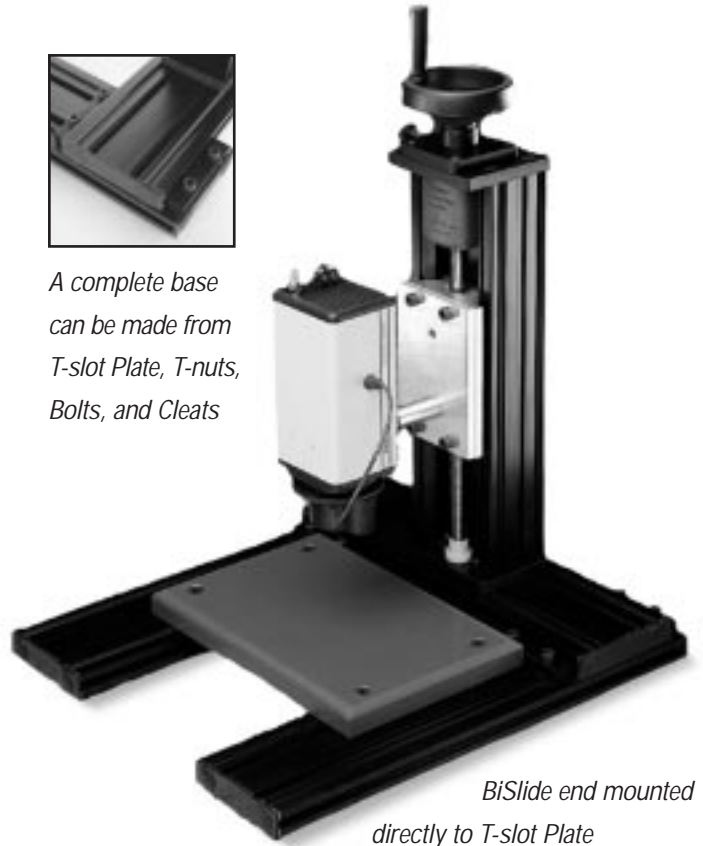
This right angle drive option has a standard BiSlide sandwich cleated to the I-beam Base profile (vertical). The bottom (horizontal) surface is the T-slot plate profile



BiSlide mounted directly to another BiSlide in an XZ configuration



A complete base can be made from T-slot Plate, T-nuts, Bolts, and Cleats



BiSlide end mounted directly to T-slot Plate

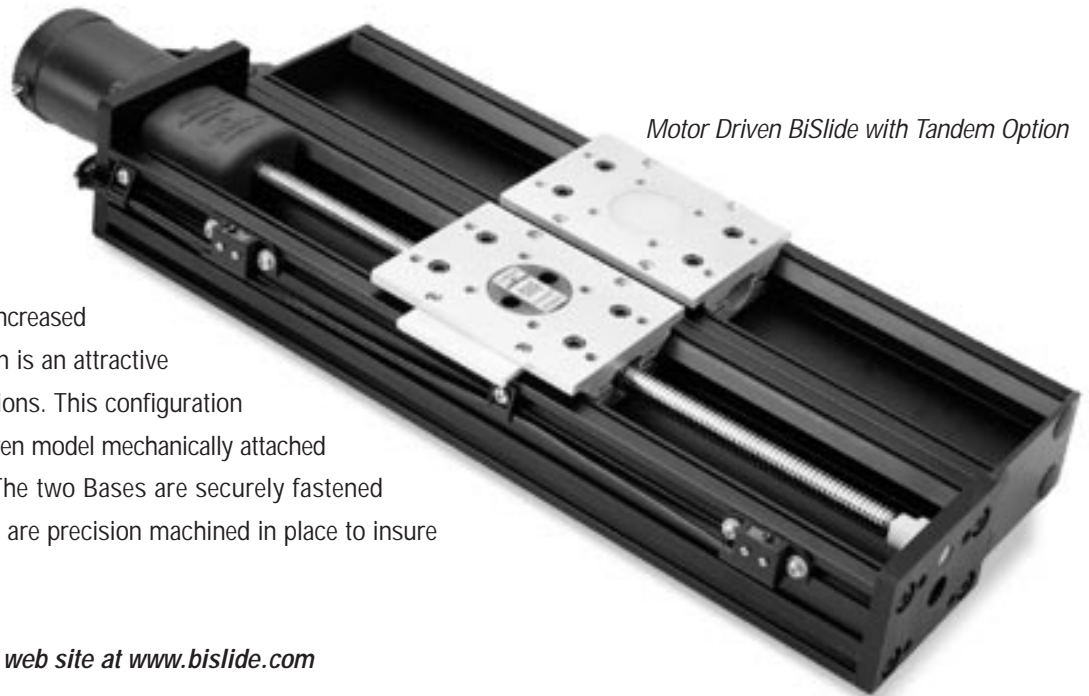
Visit www.bislide.com to see more examples.

Parallel Coupled and Tandem Configurations Handle Bigger Loads

Tandem Option Carries Heavy Loads Economically

For higher loads and increased stiffness the tandem option is an attractive solution for many applications. This configuration uses a standard motor-driven model mechanically attached to a free sliding model. The two Bases are securely fastened together and the Carriages are precision machined in place to insure flatness and parallelism.

For more options visit our web site at www.bislide.com

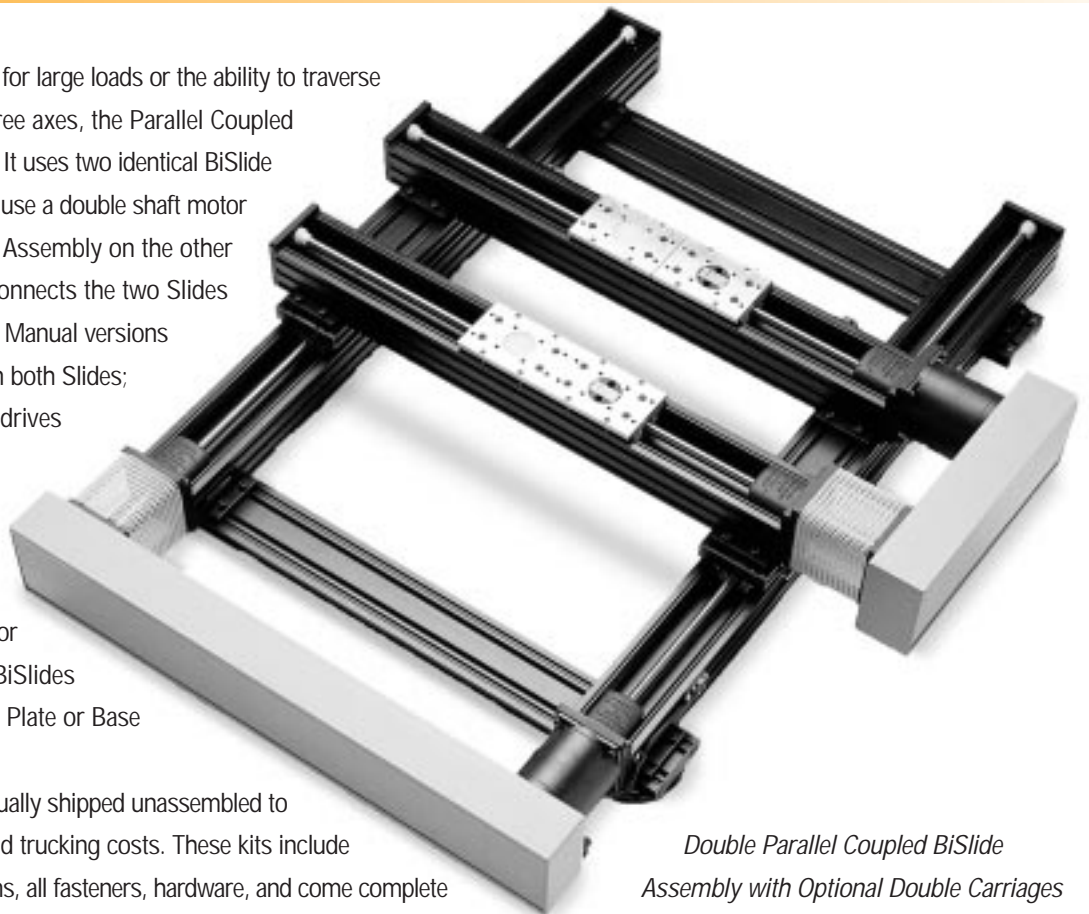


Motor Driven BiSlide with Tandem Option

Choose the Parallel Coupled Assembly For Large Loads and Long Traverses

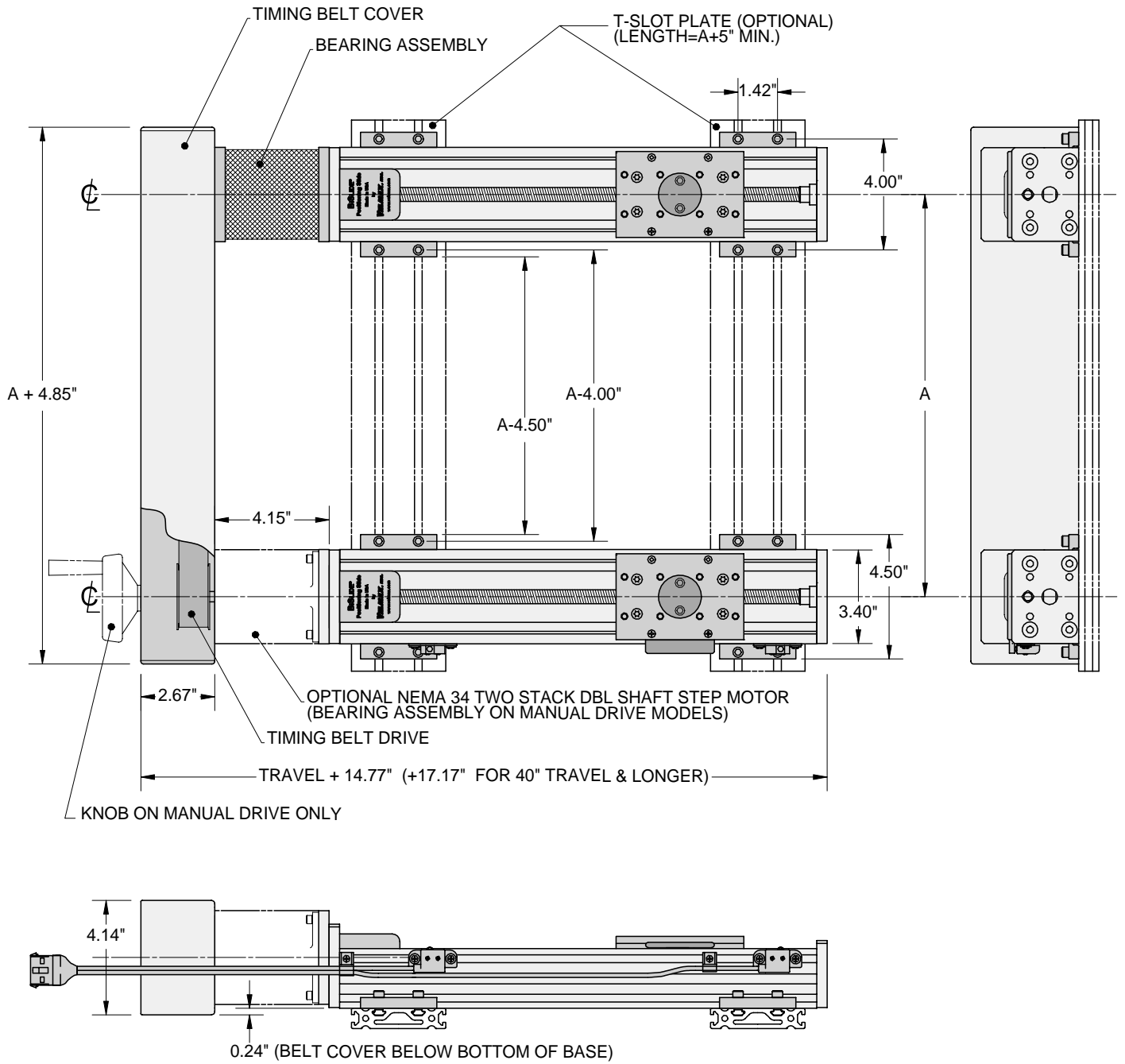
If your application calls for large loads or the ability to traverse long distances in two or three axes, the Parallel Coupled Assembly is what you need. It uses two identical BiSlide units. Motor driven models use a double shaft motor on one Slide and a Bearing Assembly on the other Slide. A timing belt drive connects the two Slides for synchronous operation. Manual versions have a Bearing Assembly on both Slides; a hand wheel (knob/crank) drives the timing belt drive. Use our inexpensive Cleats to mount your Parallel Coupled BiSlide assembly to nearly any flat surface. For a free-standing assembly, BiSlides can be cleated to the T-Slot Plate or Base structural profiles.

Parallel systems are usually shipped unassembled to eliminate crating charges and trucking costs. These kits include detailed assembly instructions, all fasteners, hardware, and come complete with a timing belt tensioner. They can be shipped fully assembled if required.



Double Parallel Coupled BiSlide Assembly with Optional Double Carriages
(see page 10 for another example)

Parallel Coupled BiSlide Assembly



A (Available Center to Center Distances in Inches)

8.5 13 14.5 16 17.5 19 20.5 22 23.5 25 26.5 28 29.5 31.5 34 36.5 39 41.5 46.5 51.5 59 66.5 81.5

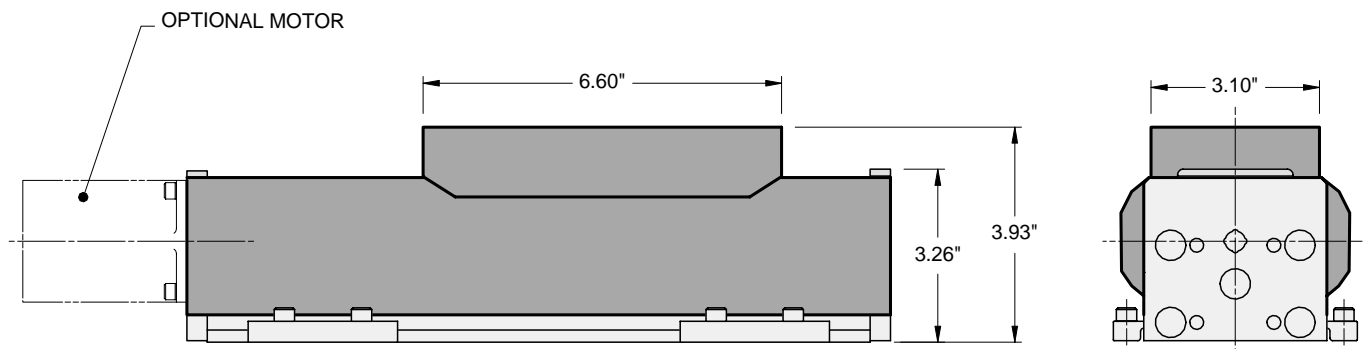
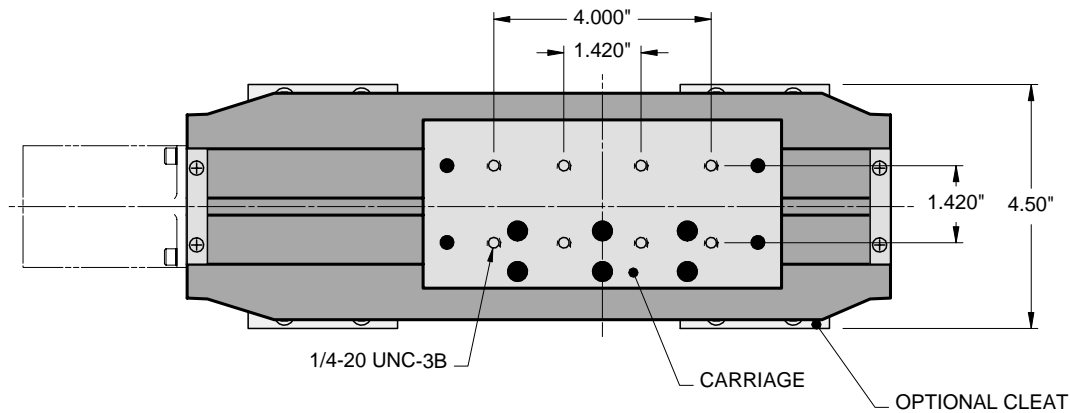
Contact our technical sales department regarding additional center to center distances

Choose the Way Cover Model to Minimize Contamination

For BiSlide installations in environments with particulate matter, machining chips and the like, use this convenient option to protect your BiSlide against damage from foreign material. The way cover encloses the ways, lead screw and limit switch assembly, protecting all of these vital areas. The way cover is a recloseable seal zipper design with Velcro™ attachment that keeps dirt out but allows easy access if you need to get inside the BiSlide. It works with the BiSlide at any orientation, so you can install it on any axis.

Travel distance is reduced by 1" for units less than 40" standard travel, but there is no loss of travel on assemblies 40" or longer. Cantilever load capacity is reduced by one half. Carriage height is 1.36" higher than standard.

BiSlide Way Cover Model with NEMA 23 Motor



Warranty Protects Your BiSlide Investment For Five Full Years

BiSlide Assembly products sold by Velmex are warranted to be free from defects for a period of 5 (five) years on all parts. Velmex's obligation under this warranty does not apply to defects due, directly or indirectly, to misuse, abuse, negligence, accidents, or unauthorized repairs, alterations, or lack of maintenance; or to items that would normally be consumed or require replacement due to normal wear. Claims must be authorized, and a return authorization number issued before a product can be returned.

The warranty does not cover items which are not manufactured or constructed by Velmex, Inc. These components are warranted by their respective manufacturer.

Under the above warranty, Velmex will, at its option, either repair or replace a nonconforming or defective product.

The above warranty is the only warranty authorized by Velmex. Velmex shall in no event be responsible for any loss

of business or profits, downtime or delay, labor, repair, or material costs, injury to person or property or any similar or dissimilar incidental or consequential loss or damage incurred by purchaser, even if Velmex has been advised of the possibility of such losses or damages.

Inasmuch as Velmex does not undertake to evaluate the suitability of any Velmex product for any particular application, the purchaser is expected to understand the operational characteristics of the product, as suggested in documentation supplied by Velmex, and to assess the suitability of Velmex products for this application.



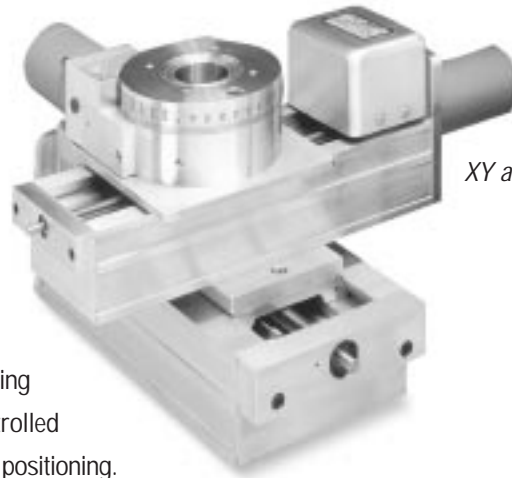
BiSlide assemblies conform to the European Machinery Directive (89/392/EEC) Annex 1.

More Positioning Solutions From Velmex

UniSlide® Manual and Motorized Assemblies For Linear and Rotary Positioning

We make stock and custom manual and motor-driven positioning equipment for a wide variety of applications in industry, manufacturing, research, and education. Our other products include precision dovetail slides, X-Y tables, rotary tables, elevating tables, linear bearings, turntables, and computer controlled multi-axis slide systems for scanning and indexing, and positioning.

Visit the Velmex web sites at www.velmex.com and www.bislide.com to see the full selection of Velmex positioning products.



XY and Theta UniSlide Assemblies



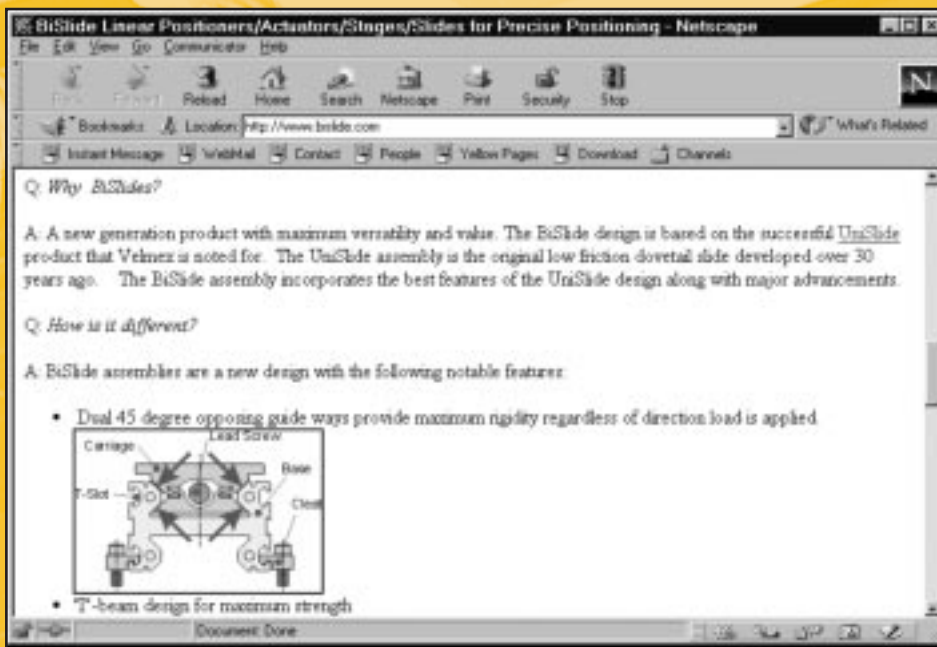
Velmex VP9000 Stepping Motor Controller



Small Three Axis Manual UniSlide Assemblies

Visit Our Web Sites at www.velmex.com and www.bislide.com. You'll Find:

- News and Updates
- Motors and Controllers
- Numerous examples of one, two, and three axis configurations of UniSlide and BiSlide assemblies
- Complete specifications including load ratings and dynamic specifications
- Cross section drawings and cutaway views of products
- CAD files for download
- Answers to common questions
- New product literature and price lists



Need Applications Help?

We're the experts in precision positioning systems. For more than three decades we've helped thousands of people with solutions to their application problems at a reasonable cost. If you have a question or need help designing your positioning system, talk with us. We can help.

How to Contact Us:

By Phone: 716-657-6151 or 800-642-6446

By Fax: 716-657-6153

Email: info@velmex.com

On the web at: www.velmex.com and www.bislide.com

By mail: Velmex, Inc., 7550 State Route 5 & 20, Bloomfield, NY 14469 USA

VELMEX, INC.